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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,430	09/08/2003	Yakov Fleytman		9032

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EXAMINER

LE, DAVID D

ART UNIT	PAPER NUMBER
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3681

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,430

Applicant(s)

FLEYTMAN, YAKOV

Examiner

David D. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/08/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This is the first Office action on the merits of Application No. 10/657,430, filed on 08 September 2003. Claims 1-13 are pending.

Documents

2. The following documents have been received and filed as part of the patent application:
 - Information Disclosure Statement, received on 09/08/03

Election/Restrictions

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-10, drawn to a drive axle assembly, classified in class 475, subclass 228.
 - II. Claims 11-13, drawn to a worm differential, classified in class 475, subclass 226.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as the hybrid gear drive, as disclosed in U.S. Patent No. 6,128,969 to Litvin et al. See MPEP § 806.05(d).

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with applicant, Yakov Fleytman, on 15 October 2004 a provisional election was made without traverse to prosecute the invention of I, claims 1-10.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. Claims 1-10 are objected to because of the following informalities:

- Claims 1-10 recite the word “assemble”, which should be --assembly--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 1-10:

- Claims 1-10 recite the limitation "face type gear". It is unclear which specific type of gear that applicant is referring to.
- Claims 3, 6, and 8-10 recite the limitation "axle shafts", which is first recited in either independent claim 1 or 5. It appears that this limitation is a double inclusion and should be referred as --said axle shafts--.
- Claim 8 recites the limitations "said additional pinion" and "said additional face type gear". There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S.**

Patent No. 6,128,969 to Litvin et al. in view of Marks' Standard Handbook for Mechanical Engineers.

Claims 1-3:

Litvin (Figs. 1 and 2; column 2, line 63 – column 3, line 59) discloses a hybrid gear drive comprising:

- An automobile transmission/gearboxes (Fig. 1, element 15) supported in a housing (column 3, lines 25-27);
- A gear drive (Fig. 2, element 10) having a multi-thread involute worm pinion (Fig. 2, element 50) and a face gear (Fig. 2, element 20); and
- Wherein the automobile transmission/gearboxes commonly includes a differential gear assembly having two side gears for connecting to axle shafts.

Litvin lacks:

- Wherein the worm pinion is an enveloping worm pinion having threads with less than one revolution.

Marks' Standard Handbook (Pages 8-99 to 8-100), on the other hand, teaches a single enveloping worm gear and a double enveloping worm gears, which appears to have threads with less than one revolution, for obtaining large speed reduction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify *Litvin* such that the multi-thread involute worm pinion is an enveloping worm pinion, in view of the *Marks' Standard Handbook*, in order to obtain larger speed reductions.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,128,969 to Litvin et al. in view of Marks' Standard Handbook for Mechanical Engineers as applied to claims 1-3 above, and further in view of U. S. Patent No. 6,010,424 to Irwin.

Claim 4:

Litvin in view of Marks' Standard Handbook discloses all elements and limitations as set forth above. Regarding claim 4, Litvin lacks wherein the traction unit includes two sets of clutches, and each clutch has a first member and a second member attached to said face type gear.

Irwin (Figs. 1-4; column 2, line 41 – column 3, line 36), however, teaches a two-piece limited slip differential comprising:

- A drive pinion (45);
- A face type ring gear (22);
- Two side gears (32) for connecting to axle shafts (1);
- Two differential pinions (35) connected to a differential case/carrier (44) via a differential pinion shaft (33);
- Two sets of clutches (i.e., Fig. 1; elements 28 and 29); and
- Wherein each set of clutch includes a first member (being element 29) connected to the axles (1) via side gears (32) and a second member (being element 28) connected to the face type ring gear (22) via the differential case (44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Litvin such that the differential gear assembly includes two sets of clutches, in view of Irwin, in order to provide better traction at a more economical and efficient manner.

13. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,128,969 to Litvin et al. in view of Marks' Standard Handbook for Mechanical Engineers and Irwin as applied to claims 1-4 above, and further in view of U. S. Patent No. 2,859,641 to V. E. Gleasman.

Claims 5-10:

Litvin in view of Marks' Standard Handbook and Irwin discloses all elements and limitations as set forth in claims 1-4 above. Regarding claims 5-10, the Litvin in view of Marks' Standard Handbook and Irwin combination lacks an additional drive axle assembly, linked to the enveloping worm, having a second enveloping worm pinion, a second face type gear, a second housing, and a second traction unit.

Gleasman (Fig. 10; column 7, line 48 – column 8, line 6), on the other hand, teaches a tandem drive axle units comprising two identical differential gear assemblies linked together as shown in Fig. 10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Litvin to include a second differential gear assembly, in view of Gleasman, in order to provide an arrangement having multi-drive-axle units, such as a four-wheel-drive vehicle, with a better traction at a more economical and efficient manner.

It also has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. V. Bemis Co.*, 193 USPQ 8.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Anderson et al. (U. S. Patent No. 4,651,587) teaches a ring gear/pinion gear design as shown in Figs. 2A and 2B.
- Buchanan Jr. (U. S. Patent No. 5,605,071) teaches an enveloped worm gear clutch as shown in Fig. 1.
- Fleytman et al. (U. S. Patent No. 6,402,652) teaches a continuously variable four-wheel drive transmission with traction control comprising enveloping worm gear as shown in Figs. 1-8.
- Fleytman (U. S. Patent Application No. 2002/0043129 A1) teaches a differential and drive axle assembly comprising an enveloping worm gear as shown in Fig. 26.

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- Duta et al. (U. S. Patent No. 5,836,076) teaches an aligning system and machine for a double enveloping speed reducer as shown in Figs. 1 and 2.
- Georgiev et al. (U. S. Patent No. 3,768,326) teaches an orthogonal skew-axis gearing as shown in Fig. 1.
- A. H. Candee et al. (U. S. Patent No. 1,683,758) teaches a gear assembly as shown in Fig. 3.
- O. E. Saari (U. S. Patent No. 2,954,704) teaches a skew axis gearing as shown in Fig. 1.
- Carter (U. S. Patent No. 4,238,970) teaches a bevel gear system as shown in Fig. 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 703-305-3690. The examiner can normally be reached on Mon-Fri (0700-1530).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A Marmor can be reached on 703-308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ddl


10/18/04
CHARLES A. MARMOH
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